Moving Ceramics from Lab to Market – Manufacturing View

Eric Norton – Bullen Ultrasonics

Ceramics Expo 2026

Booth# 528

ISO 9001/AS9100 CERTIFIED

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Bullen Ultrasonics Overview

- Machining of hard and brittle materials in aerospace, semiconductor, mems, medical,…
- 50+ years in manufacturing ceramics (Silicon, Glass, Alumina, SiC, SiC/SiC CMC and many more materials)
- Lab – Market collaborative partner with fortune 50 customers
- Ultrasonic machining, Laser micro-machining, 5-axis Grinding





Lab to market – scaling product and process

Disruptive – Flexible – Small Scale ⟷ Large Scale – Controlled - Incremental

R&D / LAB Phase	Development / Manufacturing Scale-UP	Process Maturation
• **Collaborative innovation** • Scalability considerations (target volumes, target price) • Design for Manufacturability (DFM) • Early risk identification (DFMEA) • **Rapid iteration with low fidelity POCs (Fail Fast)** • Modeling & simulation	• **Product and process prototyping** • Emerging Technologies • **Process FMEA & risk closure** • Process & quality characterization • **Automation readiness**	• LEAN manufacturing (VSM) • 5S workplace organization • Six Sigma / SPC • Continuous improvement (CI) • AI-Enabled optimization • Automation & Controls Integration

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